

02-09-05

1775 #
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Patent Application's Docket No.: 789_071

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Shuhei ISHIKAWA, Tsutomu MITSUI, Ken SUZUKI,
Nobuaki NAKAYAMA, Hiroyuki TAKEUCHI and Seiji
YASUI

Ser. No.: 09/913,353

Group Art Unit: 1775

Filed: August 13, 2001

Examiner: Archene A. Turner

Confirmation No.: 8579

For: HEAT SINK MATERIAL AND METHOD OF PRODUCING THE SAME

M.S. Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I hereby certify that this paper is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 addressed to **Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450** on *February 8, 2005* under "EXPRESS MAIL" mailing label number **EV 607072326 US**.

Gina M. Husak

REQUEST FOR RECONSIDERATION

Sir:

In response to the Office Action mailed September 10, 2004, Applicants respectfully request reconsideration and withdrawal of the rejections of record based on the following arguments. Claims 66, 68-73, 75-94 and 96-106 are pending.

Examiner Turner is thanked for courtesies extended to Applicants' undersigned representative during the telephonic interview on February 4, 2005. The substance of that interview has been incorporated into the following remarks.

1. Claims 66, 68-73, 75-94 and 96-106 were objected to under Rule 78(b) as allegedly conflicting with claims pending in USSN 10/279,959. Although Applicants do not agree with

this objection, an Amendment was filed on the '959 application on January 21, 2005, and thus the line of demarcation between the claims in these two cases is now even greater.

2. Claims 73, 75-80, 82, 84-87, 89-94, 96, 98-104 and 106 were rejected under §102(e) over Nishibayashi '848. This rejection is respectfully traversed.

The '848 patent is a divisional of U.S. Patent No. 6,171,691, which was applied by the PTO in the Office Action mailed September 27, 2002, but then withdrawn when the claims pending in the present application at that time were amended to be limited to carbon or graphite. Applicants respectfully submit that those skilled in the art understand that carbon and graphite are not the same as diamond, and this understanding was shared by the PTO when the prior rejection based on Nishibayashi '691 was withdrawn in light of the amendment to the claims limiting the material to carbon or graphite.

In light of the foregoing, it is respectfully submitted that the pending claims define patentable subject matter over Nishibayashi '848 for the same reasons that the pending claims define patentable subject matter over Nishibayashi '691. Accordingly, reconsideration and withdrawal of all grounds of rejection based on Nishibayashi '848 are respectfully requested.

3. Claims 66, 68-73, 75-94 and 96-106 were rejected under §103 over JP '832 in view of Ishikawa et al.

The PTO relied upon JP '832 as allegedly showing the features recited in the pending claims with the exception of the functional language expressly recited in the independent claims that fall under this rejection. The PTO relied upon Ishikawa as allegedly showing that the additive metal elements in JP '832 are known to perform the functions recited in the independent claims of the present application.

It is respectfully submitted, however, that this rejection is based on an “obvious to try” standard, which the Federal Circuit has repeatedly rejected. Specifically, the base material in Ishikawa is a ceramic, and thus the disclosure about the functionality of the metal additives in that reference relate to how those additives interact with a **ceramic** base material.

The base material in JP ‘832 is carbon, which Applicants respectfully submit is not a ceramic. Accordingly, without the benefit of Applicants’ own disclosure, one skilled in the art reviewing these two applied references would not have had any reason to expect that additives which perform certain functions with respect to ceramic materials would also work in the same manner with respect to carbon, as disclosed in JP ‘832.

In light of all the foregoing, Applicants respectfully submit that one skilled in the art would not have found it obvious to combine the applied references as asserted in the Office Action. Accordingly, reconsideration and withdrawal of all grounds of rejection based on JP ‘832 and Ishikawa are respectfully requested.

4. Applicants respectfully submit that dependent claim 71 also defines patentable subject matter over JP ‘832 and Ishikawa. Specifically, claim 71 requires the carbon or graphite to have a coefficient of thermal conductivity of at least 100W/mK. Attached hereto is a table from a Japanese textbook, which Applicants respectfully submit shows that commercially available carbon can have a thermal conductivity ranging anywhere from 58 to 139. Accordingly, the limitation recited in claim 71 is not an inherent characteristic of all commercially available carbons. Moreover, there is no disclosure in either of the applied references of this feature. With respect to JP ‘832, Applicants respectfully submit that the thermal conductivity values in Table 1 of that reference relate to the composite material, not

the initial carbon base material. With respect to Ishikawa, that reference relates to silicon carbide, not carbon.

In light of the foregoing, claim 71 also defines patentable subject matter over the applied references taken in any combination.

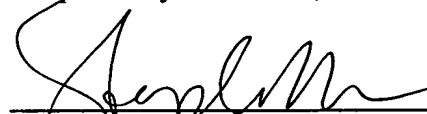
Applicants respectfully submit that all claims pending here define patentable subject matter over the art of record. Accordingly, Examiner Turner is requested to issue a Notice of Allowance for all pending claims as soon as possible.

Should Examiner Turner have any questions concerning this application, she is requested to telephone Applicants' undersigned representative at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-1446.

February 8, 2005
Date

Respectfully submitted,



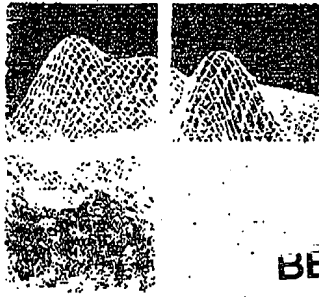
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Attachment: "Japanese Table of Thermal Conductivity Values for Carbon"

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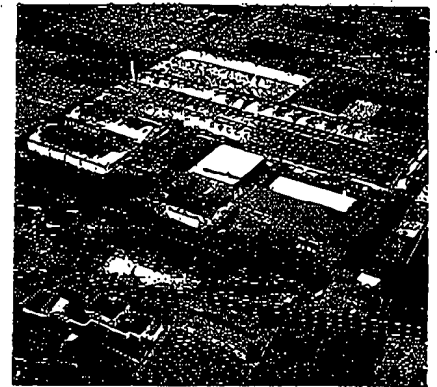


BEST AVAILABLE COPY

■等方性高密度黒鉛の開発

発明大賞 福田特別賞受賞
科学技術庁科学技術功労賞受賞
近畿化学工業会科学技術賞受賞
紫綬褒章受賞

当社は1974年に、永年にわたる業界の夢であった等方性超大型高密度黒鉛材の工業化に成功。(1975年6月19日付日刊工業新聞掲載)
以来、冶金用黒鉛材はもとより放電加工用電極材、半導体製造用/ランプ・ヒーター、原子炉用炉心材、宇宙航空用ロケットノズル等、数多くの製品を国内外市場に送り出し、多大の好評を博しております。



大野原技術開発センター
<Ohnohara Engineering & Development Center>
竣工 1974年3月

Example of mass production (1)

60-120 %K

Thermal
Conductivity

■品種別代表特性 TYPICAL GRADES / PROPERTIES

	かさ密度	硬さ	固有抵抗		曲げ強さ		圧縮強さ		引張り強さ		弾性係数		熱膨張係数		熱伝導率	
	Mg/m ³	ショア	μΩ・m	μΩcm	MPa	kgf/cm ²	MPa	kgf/cm ²	MPa	kgf/cm ²	GPa	kgf/cm ²	10 ⁻⁶ /K	10 ⁻⁶ /°C	W(m・K)	kcal/h・m・°C
IG-11	1.77	51	11.0	1100	39.2	400	78.4	800	24.5	250	9.8	1000	4.5	116	100	
IG-12	1.78	55	12.5	1250	39.2	400	88.2	900	28.4	290	10.8	1100	4.7	104	90	
IG-15	1.90	60	9.5	950	53.9	550	103.0	1050	29.4	300	11.8	1200	4.8	139	120	
IG-32	1.79	68	21.9	2190	43.1	440	114.7	1170	29.4	300	9.9	1010	5.5	58	50	
IG-43	1.82	55	9.2	920	53.9	550	90.2	920	37.2	380	10.8	1100	4.8	139	120	
IG-56	1.77	57	12.2	1220	43.1	440	88.2	900	27.4	280	10.3	1050	4.7	104	90	
IG-70	1.83	58	10.0	1000	47.0	480	102.9	1050	31.4	320	11.8	1200	4.6	128	110	
ISEM-1	1.68	45	13.5	1350	36.3	370	68.6	700	19.6	200	8.8	900	4.2	93	80	
ISEM-2	1.78	55	11.0	1100	41.2	420	83.3	850	24.5	250	9.8	1000	4.6	116	100	
ISEM-3	1.85	60	10.0	1000	49.0	500	103.0	1050	29.4	300	11.8	1200	5.0	128	110	
ISEM-8	1.78	63	13.4	1340	51.9	530	105.8	1080	34.3	350	10.1	1030	5.6	93	80	
ISO-61	1.79	76	15.2	1520	63.7	650	140.1	1430	42.1	430	12.4	1270	5.6	81	70	
ISO-63	1.82	80	15.5	1550	76.4	780	171.5	1750	53.9	550	13.2	1350	5.6	70	60	
ISO-66	1.82	75	14.4	1440	69.6	710	134.3	1370	46.1	470	12.6	1290	7.1	81	70	
ISO-88	1.90	90	15.5	1550	93.1	950	181.0	1850	68.6	700	12.7	1300	6.5	70	60	
SIC-6	1.85	60	10.0	1000	49.0	500	103.0	1050	29.4	300	11.8	1200	5.0	128	110	
SIC-12	1.77	65	14.1	1410	47.0	480	93.1	950	29.4	300	10.8	1100	5.0	81	70	
KC-65	1.80	95	21.0	2100	80.4	820	205.8	2100								

注) 1. 熱膨張係数の測定温度範囲は350~450°Cです。

2. 上記品種の高純度処理: 灰分10 ppmおよび超高純度処理: 灰分2 ppmも可能です。
(高純度品については「超高純度等方性黒鉛」カタログをご参照下さい。)

3. 上記数値は代表特性であり保証値ではありません。

4. 単位への換算 $\mu\Omega \cdot m = \mu\Omega cm \times 0.01$ $MPa = kgf/cm^2 \times 0.098$

$GPa = kgf/cm^2 \times 0.098$ $W(m \cdot K) = kcal/h \cdot m \cdot ^\circ C \times 0.2388$